

WHAT IS CLAIMED:

1. A circuit interrupting device comprising:
  - a housing;
  - a first electrical conductive path disposed at least partially within said housing
  - 5 and capable of being electrically connected to a source of electricity;
  - a second electrical conductive path disposed at least partially within said housing
  - and capable of conducting electrical current to a load when electrical continuity
  - between said first and second electrical conductive paths is made;
  - a circuit interrupter disposed within said housing and configured to break the
  - 10 continuity between said first and second conductive paths upon the occurrence of a
  - predetermined condition;
  - a reset mechanism configured to make electrical continuity between the first and
  - second conductive paths after said predetermined condition occurs; and
  - a reset lock-out that prevents the making of electrical continuity between said
  - 15 first and second conductive paths if said circuit interrupter is non-operational.
2. The circuit interrupting device according to claim 1, wherein said circuit
- interrupter includes a trip mechanism used to make and break electrical continuity
- between said first and second electrical conductive paths, and sensing circuitry used to
- 20 sense the occurrence of said predetermined condition.

3. The circuit interrupting device according to claim 2, wherein said trip mechanism uses electro-mechanical components to make and break electrical continuity between said first and second electrical conductive paths.

5           4. The circuit interrupting device according to claim 1, wherein said predefined condition comprises a ground fault, an arc fault, an appliance leakage fault, an immersion fault or a test cycle.

          5. A circuit interrupting device comprising:

10           a housing;

          a first electrical conductor disposed at least partially within said housing and capable of being electrically connected to a source of electricity;

          a second electrical conductor disposed at least partially within said housing and capable of conducting electrical current to a load when electrically connected to said

15   first electrical conductor;

          a circuit interrupter disposed within said housing and configured to cause electrical discontinuity between said first and second conductors upon the occurrence of a predetermined condition;

          a reset mechanism configured to reestablish electrical continuity between the

20   first and second conductors after said predetermined condition occurs; and

          a reset lock-out that prevents reestablishment of electrical continuity between said first and second conductors if said circuit interrupter is non-operational.

6. The circuit interrupting device according to claim 5, wherein said predefined condition comprises a ground fault, an arc fault, an appliance leakage fault, an immersion fault or a test cycle.

5

7. A circuit interrupting device comprising:

a housing;

at least one input conductor disposed at least partially within said housing and capable of being electrically connected to a source of electricity;

10 at least one output conductor disposed within said housing and capable of conducting electrical current to a load when electrically connected to said at least one input conductor;

a circuit interrupter disposed within said housing and configured to break said electrical connection between said input and output conductors in response to the  
15 occurrence of a predetermined condition;

a reset lock-out responsive to the occurrence of said predefined condition such that said reset lock-out is operable between a lock-out position wherein said reset lock-out inhibits resetting of said electrical connection between said input and output conductors and a reset position wherein said reset lock-out does not inhibit resetting of  
20 said electrical connection between said input and output conductors; and

a reset mechanism operatively associated with said reset lock-out and said circuit interrupter such that activation of said reset mechanism activates said circuit

interrupter which facilitates movement of said reset lock-out from said lock-out position to said reset position by said reset mechanism.

8. The circuit interrupting device according to claim 7, wherein said circuit  
5 interrupter comprises a coil assembly, a movable plunger responsive to energizing of said coil assembly and a banger attached to said plunger such that movement of said plunger is translated to movement of said banger and movement of said banger causes said reset lock-out to operate in said lock-out position or said reset position.

10 9. The circuit interrupting device according to claim 8, wherein said input conductor has an electrical contact attached thereto and said output conductor has an electrical contact attached thereto, and at least one of said conductors is movable relative to the other such that said electrical connection is made when said input and output contacts are closed.

15 10. The circuit interrupting device according to claim 9, wherein when said reset lock-out is in said lock-out position said contacts are inhibited from closing.

11. The circuit interrupting device according to claim 7, wherein said reset  
20 mechanism comprises:

a reset button coupled to said reset lock-out; and

a reset contact that is activated when said reset button is depressed.

12. The circuit interrupting device according to claim 7, wherein said predefined condition comprises a ground fault, an arc fault, an appliance leakage fault, an immersion fault or a test cycle.

- 5           13. A ground fault circuit interrupting device comprising:
- a housing;
- at least one input conductor disposed at least partially within said housing and capable of being electrically connected to a source of electricity;
- at least one output conductor disposed within said housing and capable of
- 10   conducting electrical current to a load when electrically connected to said at least one input conductor;
- a circuit interrupter disposed within said housing and configured to break said electrical connection between said input and output conductors in response to the occurrence of a ground fault or test cycle; and
- 15           a reset mechanism having a reset lock-out responsive to activation of said circuit interrupter so as to be movable between a lock-out position wherein said reset lock-out inhibits resetting of said electrical connection between said input and output conductors and a reset position wherein said reset lock-out does not inhibit resetting of said electrical connection between said input and output conductors, wherein when said reset
- 20   mechanism is activated said circuit interrupter is activated to facilitate movement of said reset lock-out from said lock-out position to said reset position by said reset mechanism and resets said electrical connection between said input and output

conductors.

14. The ground fault circuit interrupting device according to claim 13, wherein  
said circuit interrupter comprises a coil assembly, a movable plunger responsive to  
5 energizing of said coil assembly and a banger attached to said plunger such that  
movement of said plunger is translated to movement of said banger and movement of  
said banger causes said reset lock-out to operate in said lock-out position or said reset  
position.

10 15. The ground fault circuit interrupting device according to claim 14, wherein  
said input conductor has an electrical contact attached thereto and said output conductor  
has an electrical contact attached thereto, and at least one of said conductors is movable  
relative to the other such that said electrical connection is made when said input and  
output contacts are closed.

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16. The ground fault circuit interrupting device according to claim 15, wherein  
when said reset lock-out is in said lock-out position said contacts are inhibited from  
closing.

20 17. The ground fault circuit interrupting device according to claim 13, wherein  
said reset mechanism comprises:

a reset button coupled to said reset lock-out; and

at least one reset contact that is activated when said reset button is depressed.

18. A circuit interrupting device comprising:

housing means;

5       input conductor means disposed at least partially within said housing means and  
capable of being electrically connected to a source of electricity;

output conductor means disposed at least partially within said housing means  
and capable of conducting electrical current to a load when electrically connected to  
said input conductor means;

10       circuit interrupting means disposed within said housing means for breaking said  
electrical connection between said input and output conductor means in response to the  
occurrence of a predetermined condition;

reset lock-out means responsive to activation of said circuit interrupting means  
for inhibiting resetting of said electrical connection between said input and output  
15       conductor means after said circuit interrupting means breaks said connection between  
said input and output conductor means; and

reset means disposed within said housing means for activating said circuit  
interrupting means so that said lock-out means does not inhibit resetting of said  
electrical connection between said input and output conductor means and for resetting  
20       said electrical connection between said input and output conductor means.

19. The circuit interrupting device according to claim 18, wherein said circuit interrupting means comprises a coil means, movable plunger means responsive to energizing of said coil means and banger means attached to said plunger means such that movement of said plunger means is translated to movement of said banger means  
5 and movement of said banger means causes said reset lock-out means to operate in said lock-out position or said reset position.

20. The circuit interrupting device according to claim 19, wherein said input conductor means includes electrical contact means and said output conductor means  
10 includes electrical contact means, and wherein at least one of said conductor means is movable relative to the other such that said electrical connection is made when said input and output contacts means are closed.

21. The circuit interrupting device according to claim 20, wherein when said  
15 reset lock-out means is in said lock-out position said input and output contact means are inhibited from closing.

22. The circuit interrupting device according to claim 18, wherein said reset means comprises:  
20 a reset button coupled to said reset lock-out means; and  
reset contact means that is activated when said reset button is depressed.



23. The circuit interrupting device according to claim 18, wherein said predefined condition comprises a ground fault, an arc fault, an appliance leakage fault, an immersion fault or a test cycle.

5           24. A method for interrupting and resetting electrical connections in fault interrupting devices having a housing, an input conductor disposed at least partially within the housing and electrically connected to a source of electricity, and an output conductor disposed at least partially within the housing and capable of conducting electrical current to a load when electrical continuity between the input and output  
10 conductors is made, said method comprising:

- sensing the occurrence of a predefined condition;
- breaking electrical continuity between the input and output conductors when said predetermined condition is sensed using a circuit interrupting mechanism;
- enabling a lock-out mechanism to inhibit the making of electrical continuity  
15 between the input and output conductors after breaking electrical continuity between said conductors; and
- activating a reset mechanism that activates said circuit interrupting mechanism to disable said lock-out mechanism and makes electrical continuity between said input and output conductors.

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25. The method according to claim 24, wherein said predefined condition comprises a ground fault, an arc fault, an appliance leakage fault, an immersion fault or a test cycle.

5           26. A circuit interrupting device comprising:

a housing;

a first electrical conductive path disposed at least partially within said housing and capable of being electrically connected to a source of electricity;

a second electrical conductive path disposed at least partially within said housing and capable of conducting electrical current to a load when electrical continuity between said first and second electrical conductive paths is made;

a circuit interrupter disposed within said housing and configured to break the continuity between said first and second conductive paths upon the occurrence of a predetermined condition;

15           a reset mechanism configured to make electrical continuity between the first and second conductive paths after said predetermined condition occurs; and

a reset lock-out that prevents the making of electrical continuity between said first and second conductive paths if an open neutral condition exists.

20           27. The circuit interrupting device according to claim 26, wherein said predefined condition comprises a ground fault, an arc fault, an appliance leakage fault, an immersion fault or a test cycle.